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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/563,646

01/06/2006

Francesco Pessolano

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER

FONG, VINCENT

ART UNIT

PAPER NUMBER

2112

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

12/22/2006

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/563,646

Applicant(s)

PESSOLANO, FRANCESCO

Examiner

Vincent Fong

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 06 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 01-06-2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the application and amendments filed on 01-06-2006.

Claims 1-8 are pending and have been examined.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 01-06-2006 is being considered by the examiner. Document WO9836350 is filed without copy, it is not being considered by the examiner.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Method and system for branch prediction using system activity pattern".

4. Claims 1-8 are objected to because of the following informalities:

The reference number should not be in the claim; they are advised to be removed from claims 1 and 8.

As per claim 1, limitations "the outcome"(line 1), "the occurrence"(line 2) lack antecedent basis and should be refer as "outcome" and "occurrence" respectively.

As per claim 5, limitation "the latest activity" (line 2) lacks antecedent basis and should be refer as "latest activity".

As per claim 6, limitation "the outcome history" (line 2) lacks antecedent basis and should be refer as "outcome history".

As per claim 7, limitation "the confidence" (line 2) lacks antecedent basis and should be refer as "confidence".

Because of the limitation "branch history", it is believed that claim 7 was intended to depend on claim 6 and has been treated as such for the remainder of this Office action.

As per claim 8, limitations "the outcome"(line 1), "the occurrence"(line 2) lack antecedent basis and should be refer as "outcome" and "occurrence" respectively.

Any claim not specifically addressed above, is being rejected as incorporating the deficiencies of a claim upon which it depends.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear whether "previous branches" in the claim is part of the limitation or not. For the examination, it is assumed that the limitation as "outcome history of that and previous branches".

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Farcy et al. ("Dataflow analysis of branch mispredictions and its application to early resolution of branch outcomes", hereinafter Farcy).

As per claim 1, Farcy discloses:

Apparatus for predicting the outcome of a conditional branch within a computer system, the apparatus comprising means for identifying the occurrence of a conditional branch

(Page 6 column 2 paragraph 7), system is able to tag all conditional branch, therefore means to identify occurrence of conditional branch inherently exist, means (20) for obtaining data relating to system activity since a previous branch (program window, figure 9), means for comparing said data with data relating to previous system activity(branch window, figure 9, page 6 column 1 paragraph 2), and means for predicting the branch outcome based on such comparison (anticipation table, figure 9).

As per claim 2, rejection of claim 1 is incorporated and Farcy further discloses: the data relating to system activity (instruction execution) comprises average system activity (branch flow execution, page 6 column 1 paragraph 2), branch flow contain less instructions when compare to program flow, therefore it only contain an average system activity.

As per claim 3, rejection of claim 1 is incorporated and Farcy further discloses: an activity history table is provided in which is stored data relating to previous system activity (figure 9,10), each entry of the anticipation table corresponds to a particular branch window and the branch outcome (outcome bit) to which such activity corresponded (page 7 column 1 paragraph 6).

As per claim 4, rejection of claim 3 is incorporated and Farcy further discloses: when a conditional branch is encountered (page 7 column 2 paragraph 2), retrieving data relating the system activity between the current and previous branches (branch PC

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which is associated to a particular branch window), and means for comparing this data with the data contained in the activity history table (matching index to an entry in the anticipation window) (page 7 column 1 paragraph 6), wherein said means for predicting the branch outcome selects the branch outcome (anticipation bit, figure 10) which has associated therewith activity data (branch window) which most closely resembles the current retrieved activity data (matching the program window branch to a entry generate by the corresponding branch window) (figure 9).

As per claim 5, rejection of claim 4 is incorporated and Farcy further discloses: the activity history table (anticipation window) updated with the latest activity data (outcome bit send to the anticipation window) (page 7 column 1 paragraph 6) and the selected branch outcome (by clearing the read bits, page 7 column 2 paragraph 5).

As per claim 6, rejection of claim 1 is incorporated and Farcy further discloses: means (gshare predictor) for predicting the outcome of a conditional branch using the outcome history of that and previous branches (page 8 column 1 paragraph 5).

As per claim 7, rejection of claim 6 is incorporated and Farcy further discloses: data relating to the activity of the system is only used for branch outcome prediction (anticipation) if the confidence of accuracy of branch outcome prediction using branch history (correlation based branch prediction) is relatively low (page 1 column 2 paragraph 2).

As per claim 8, Farcy discloses:

A method for predicting the outcome of a conditional branch within a computer system, the method comprising the steps of identifying (105) the occurrence of a conditional branch (Page 6 column 2 paragraph 7), system is able to tag all conditional branch, therefore means to identify occurrence of conditional branch inherently exist, obtaining (106) data relating to system activity since a previous branch (program window, figure 9), comparing (110) said data with data relating to previous system activity (branch window, figure 9, page 6 column 1 paragraph 2), and predicting (108) the branch outcome based on such comparison (anticipation table, figure 9).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lempel (USPN 5978909) discloses a branch prediction apparatus which comprises two different predictors and it is configured to pick one of the prediction from the predictors under different conditions.

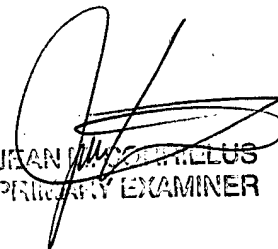
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent Fong whose telephone number is 571-270-1409. The examiner can normally be reached on Monday to Thursday from 7:00 to 4:30. The examiner can also be reached on alternate Friday from 7:00 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chameli Das can be reached on 571-272-3696. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vincent Fong
December 20, 2006

VF


JEAN M. SCHELLUS
PRIMARY EXAMINER